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By-Morrison, Edward J.

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Activity from July 1 through September 30, 1965 was concentrated on developing objectives for the instructional and guidance programs. The instructional objectives sought were statements of successful student performance which include the criteria of success and the conditions under which the performance is to take place. Criteria specified that an objective should communicate the author's intent, be a statement about the student, specify the criterion of acceptable performan"e, imply the appropriate test or evaluation of learning, and imply appropriate learning conditions. An objective was defined by translating the general goal into a performance statement at the same level of generality. A second set of statements covered all the capabilities to be included for consideration at that level of generality. This process was continued until the statements produced were descriptions of task performance. To achieve the instructional objectives, each student must be provided with the assistance, guidance, and direction needed for success. The general objective of the guidance program is to assist the student as necessary to insure his progress toward realistic goals of vocational satisfaction, responsible citizenship, and self-fulfillment while encouraging maximum participation in decision making. Other reports are available as VT 001 392-001 397, VT 004 848, and ED 013 318. (HC)

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SECOND QUARTERLY TECHNICAL REPORT

Project No. 5-0009

Contract No. OE-5-85-019

DEVELOPMENT AND EVALUATION OF AN EXPERIMENTAL CURRICULUM FOR THE NEW QUINCY (MASS.) VOCATIONAL-TECHNICAL SCHOOL

The Problem of Defining Objectives

30 September 1965

U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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American Institutes for Research
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FOREWORD

This report, submitted in compliance with Article 3 of the contract, reports on technical activities of Project ABLE during its second quarter of operation, 1 July through 30 September 1965. A brief overview of the project is presented first, followed by a report summary which includes a short review of technical schedules. The major portion of the report is devoted to consideration of educational objectives and includes a discussion of criteria for objectives followed by sections on defining instructional objectives in Project ABLE and on objectives for the guidance program. Plans for next quarter are outlined.

OVERVIEW: Project ABLE

A Joint Research Project of: Public Schools of Quincy, Massachusetts
and American Institutes for Research

Title: DEVELOPMENT AND EVALUATION OF AN EXPERIMENTAL CURRICULUM FOR THE NEW QUINCY (MASS.) VOCATIONAL-TECHNICAL SCHOOL

Objectives: The principal goal of the project is to demonstrate increased effectiveness of instruction whose content is explicitly derived from analysis of desired behavior after graduation, and which, in addition, attempts to apply newly developed educational technology to the design, conduct, and evaluation of vocational education. Included in this new technology are methods of defining educational objectives, deriving topical content for courses, preparation of students in prerequisite knowledges and attitudes, individualizing instruction, measuring student achievement, and establishing a system for evaluating program results in terms of outcomes following graduation.

Procedure: The procedure begins with the collection of vocational information for representative jobs in eleven different vocational areas. Analysis will then be made of the performances required for job execution, resulting in descriptions of essential classes of performance which need to be learned. On the basis of this information, a panel of educational and vocational scholars will develop recommended objectives for a vocational curriculum which incorporates the goals of (1) vocational competence; (2) responsible citizenship; and (3) individual self-fulfillment. A curriculum then will be designed in topic form to provide for comprehensiveness, and also for flexibility of coverage, for each of the vocational areas. Guidance programs and prerequisite instruction to prepare junior high students also will be designed. Selection of instructional materials, methods, and aids, and design of materials, when required, will also be undertaken. An important step will be the development of performance measures tied to the objectives of instruction. Methods of instruction will be devised to make possible individualized student progression and selection of alternative programs, and teacher-training materials will be developed to accomplish inservice teacher education of Quincy School Personnel. A plan will be developed for conducting program evaluation not only in terms of end-of-year examinations, but also in terms of continuing follow-up of outcomes after graduation.

Time Schedule: Begin 1 April 1965
Complete 31 March 1970
Present Contract to 30 June 1966

REPORT SUMMARY

During the present reporting period, technical activity has been concentrated on development of project objectives for instruction and for the guidance program. The objectives sought are unambiguous statements of successful student performance which include the criteria of success and the important conditions under which the performance is to take place. Before such objectives can be selected, a logical structure must be developed through which specific objectives can be related to the broad educational goals of the curriculum. This report reviews criteria for objectives, describes the necessary logical structure, and illustrates its application in Project ABLE. In addition, the development of objectives for the guidance program is reviewed and related to the development of instructional objectives.

During the immediately preceding quarter, activity centered on vocational analysis and review of guidance program needs, work which was an essential preliminary to the development of objectives. During next quarter, the Advisory Panel will review objectives so far developed, objectives will be revised and augmented, and derivation of topic objectives will begin.

THE PROBLEM OF DEFINING OBJECTIVES

INTRODUCTION

The time has long since past when it was necessary to defend the proposition that objectives are needed before an educational program is developed. The importance of defining instructional objectives as an initial step in the planning of instruction has been emphasized at least since the pioneering work of Tyler (1934, 1949). Attention now has shifted to the problems of identifying the criteria for objectives and to the process of arriving at objectives which meet the criteria.

This paper reports on the status of Project ABLE with respect to development of objectives for the new curriculum and for the guidance program. Since the development of objectives is not complete at this writing, the report may be likened to a snapshot of work in progress taken on 30 September 1965. Many changes have taken place before this picture. More changes can be expected after the picture. But, as of this date, the report faithfully records the status of the process.

The first of the three sections which follow reviews briefly the major criteria now recognized for instructional objectives. The second section discusses the development of objectives for the curriculum in Project ABLE. The last section summarizes the development of objectives for the guidance program.

CRITERIA FOR OBJECTIVES

Fidelity in Communication

Probably, the basic requirement for an educational objective is that it communicate unambiguously the intent of its author. Without such clarity, an objective has little chance to influence the educational process. Thus, only when an objective communicates without ambiguity can measures be developed to determine with confidence whether the objective has been met, or can learning experiences be devised to develop the desired capabilities in students, or can students use the objective as a guide to their efforts, or can sets of objectives be assessed for appropriateness and completeness. Lindvall (1964, p. 1) notes that in many schools,

> "...an outside observer may have difficulty in relating what he sees taking place in the day-by-day instruction in a classroom to the school's philosophy of education ....(because objectives) are stated in such a general form that any teacher can look at them and, no matter what he does with his classes, can convince himself that these are the purposes that guide his teaching."

To avoid this kind of confusion, objectives must use language and be so stated as to minimize the possibility of misinterpretation.

Statement About Students

Learning involves changes in the capabilities of students. That is, a student has learned when he is able to demonstrate some capability which he could not demonstrate before the learning experience. Various teaching methods might be used in support of the students' learning activities, but teaching methods and aids are not the objectives of learning. Objectives should be statements about the student.

Statement of Performance

At least three relatively independent sources have recognized that communication is much improved when objectives are stated as observable performances of the student. Thus, educational testing and evaluation is an area from which emphasis on behavioral statements of objectives has been persistent since Tyler's early work wherein he wrote, "Each objective must be defined in terms which clarify the kind of behavior which the course should help to develop among the students; that is to say, a statement is needed which explains the meaning of the objective by describing the reactions we can expect of persons who have reached the objectives" (Tyler, 1934, p. 18).

A second source of emphasis is the work in military technical training where it was found essential to specify the performances expected of a student upon completion of training. Several accounts of the procedures for development of training objectives by "task description" are available (Folley, Fairman, & Jones, 1960; Miller, 1962; Smith, 1964).

Finally, nearly all of the work on programmed instruction has proceeded by specifying instructional objectives first. A particularly readable guide to the preparation of objectives for instructional programs and some examples of the benefits of stating objectives in terms of the terminal behavior expected of the learner is provided by Mager (1962). He, as well as others, emphasizes that the objective must include specification of the important conditions under which the desired behavior is expected to occur and the criterion of acceptable performance.

Implications for Evaluation

Since there is the need to assess students' learning progress, objectives are preferred which indicate the criteria for successful learning. The only way to verify that learning has occurred and to identify what was learned is to require the student to demonstrate his new capability in some kind of observable performance. Therefore, the objective we seek is of the type described in the preceding paragraph, namely, one which specifies the end

performance desired of the student. It is important, of course, that the objective and the evaluation agree as to the criterion performance. Otherwise, the evaluation would not assess the student's learning of the stated objective. To avoid this difficulty, objectives must specify the important conditions under which the student must demonstrate his new capability and must clearly state the criteria by which his performance will be judged to show that the desired learning has, or has not, taken place. Objectives stated in this way directly imply the appropriate test or evaluation of learning.

Implications for Training

Objectives also might be used as a basis for devising what Gagné (1964) has called effective tactics of instruction. If objectives could be written for which the effective conditions for learning were indicated directly, their value would be greatly enhanced.

In the effort further to improve communication and to aid in the planning of learning experiences, taxonomies of educational objectives have been prepared (Bloom, Englehart, Furst, Hill, & Krathwohl, 1956; Krathwohl, Bloom, & Masia, 1964). These taxonomies classify the intended behavior of students. The behaviors are considered to constitute a hierarchy. Consistent use of the categories of behavior as defined in these documents surely would succeed in improving the communication possibilities of many heretofore poorly defined words. However, Gagné (1964) points out that the categories of behavior defined by these taxonomies do not clearly correspond to a similar variety of learning conditions. The kind of behavior defined in one category does not always require a set of learning conditions which is different from the set required by other behavior categories.

The selection of learning units, the sequence of units and the conditions under which each learning should take place all are arrived at by way of analysis proceeding from the objective stated in performance terms. The process, described by Gagné (1962), begins by identifying the capability required for performance of the task which is the objective. The question then is asked, "What kinds of previously learned capabilities need to be assumed if the person

is going to learn <u>this</u> capability under a single set of learning conditions?" The answer to this question identifies one or more new capabilities which are simpler and more general than the capability from which they were derived. The procedure for each subordinate capability is repeated until a hierarchy of capabilities is defined, the lowest level of which is not analyzable further or is within the repertoire of all students involved. The subordinate capabilities thus defined become the units of instruction.

Since a unit is a capability which is appropriately learned under one particular set of learning conditions, the categories of learning conditions identified by Gagné (1964; 1965a) as corresponding to particular capabilities are useful in differentiating learning units and in devising effective learning experiences. Practical procedures to facilitate the analysis of objectives have been described (e.g., Miller, 1962) as "task analysis." However, there is no taxonomy of performances (tasks) which can be used in stating "course" objectives so as to have direct differential implications for appropriate learning conditions.

Appropriate Specificity

Tyler (1964) has observed that clarity sometimes is confused with a high degree of specificity when selecting the capabilities to be represented in course objectives. He emphasizes that empirical evidence, gathered from experience in using an objective, is essential to final evaluation of the appropriateness of its level of generality. He suggests, however, that the appropriate level of generality is the level of behavior which is required for effective use in life. That is, the performance required by a course objective should be a behavior which can be valued in and of itself. This consideration results in objectives similar to the "tasks" defined in military training research as, "a group of activities that generally occur close together and have a common purpose" (Smith, 1964, p. 14). An example of a performance suiting Tyler's criterion and Smith's definition would be: repair a carburetor; another would be: translate into English a paragraph from a French newspaper.

This brief review suggests that the educational objectives we should seek are unambiguous statements of student performance which include the

the criteria of success and the important conditions under which the performance is to take place. The purpose of the next section of this report is to describe the development of such objectives for Project ABLE.

DEFINING INSTRUCTIONAL OBJECTIVES FOR PROJECT ABLE

The goals of education have been formulated variously by a number of individuals and groups (Commission on the Reorganization of Secondary Education, 1918; Educational Policies Commission, 1938; Gardner, 1960; National Education Association, 1964; Rockefeller Brothers Fund, 1958). Some of these formulations have found wide acceptance and have been used by many school systems in developing statements of basic purpose or philosophy. There is a consistency in the goals emphasized by these groups (Gagné, 1965b). Thus, there is consensus that education has the purposes of:

1. developing individuals' talents so that they may achieve satisfaction in a life work or vocation,
2. developing responsible citizenship, and
3. making it possible for the individual to participate in and share with others a variety of aesthetic experiences.

These three goals were considered at the outset to be appropriate broad objectives for Project ABLE and it was planned that a curriculum would be developed to satisfy each of them. Thus, it was said,

> "...education is not conceived as being narrowly vocational, but rather as designed to produce effective and well-adjusted citizens for the modern world. Accordingly, the design of curricula and instructional procedures is intended to place suitable emphasis upon the need for generalizable knowledge having the aims of responsible citizenship, self-fulfillment as an individual, as well as flexibility of vocational choice in the face of changing occupational patterns" (American Institutes for Research & Quincy Public Schools, 1964, p. 10).

However suitable these may be as general goals, they do not qualify as satisfactory objectives by our criteria of the preceding section. This was recognized in the original proposal. In fact, one of the important purposes

stated for the project is to demonstrate increased effectiveness of instruction when the content of that instruction is derived explicitly from the behavior desired of graduates. To satisfy this purpose, specific instructional objectives must be written. But what behavior is desired of graduates? What should the specific objectives be?

These questions pose the first problem faced in Project ABLE: to bridge the gap between the broad goals and the specific objectives. Parenthetically, it might be noted that this is an example of a fundamental problem in education. People can learn facts, principles, skills, concepts, attitudes, etc., but they cannot learn all of them. Education implies organized learning of some of them. The problem is to identify that set of objectives which best satisfies broadly-stated goals within the given practical operating limitations. We turn now to discussion of the process whereby specific objectives are being defined and selected in Project ABLE.

General Procedure

It is useful to note that the procedure used to "bridge the gap" between broad goals and specific objectives can be thought of as a procedure for defining the broad goals. We wish to produce a set of performance statements (objectives) which collectively denote what is meant by the goal, in our particular usage. What is meant by the goal is the capability of performing the kinds of tasks selected as objectives. The particular goal definition so derived may not satisfy everyone. Indeed, the experience of graduates of a curriculum based on a particular definition may convince even the authors that a change of objectives and, therefore, of the definition, is desirable or necessary. The tremendous advantages offered by the definition of broad goals in terms of specific objectives are:

1. it is possible to decide that the goal and not something else needs to be changed, and
2. it is possible to identify and make specific changes in response to specific needs.

One conceivable way to proceed from a general goal to a set of specific

objectives, would be to enumerate all of the individual human performances which any one of a group of people could think of as illustrations of goal achievement, and then select those which formed the best set according to some criterion. The problems with such a procedure are serious. Thus, the list of performances prior to selection normally would be extremely long. There would be no systematic assurance that all major kinds of performance were included for consideration. Further, the selection process would be exceedingly complex since hundreds of specific performances would have to be compared and evaluated relative to one another.

Another procedure, and this is the one used in Project ABLE, starts by translating the general goal into a performance statement at the same level of generality. The question then is asked, "What capabilities must be assumed if a person is to satisfy this performance requirement?" The answer to the question provides one or more new statements which serve to specify further the original one. It is important that the second set of statements cover all of the capabilitites one wishes to include for consideration at that level of generality. The procedure then is repeated generating, for each second level statement, a set of statements which provides further specification. This process is continued until the statements produced are descriptions of task performances. These latter are the specific objectives we seek.

The principal advantages of this procedure are three. First, selection of objectives takes place at the most general level possible so that vast numbers of conceivable objectives are considered and eliminated implicitly rather than by the much more laborious explicit procedure. Secondly, it is possible to be complete at each level thus assuring that no important kind of performance is left unconsidered. Finally, the chain of statements provides an explicit rationale by which specific instructional objectives are related to the general goal. The procedure is simple in concept and effective in application. Its operation may be clarified by consideration of the following material describing its step-by-step application in Project ABLE.

Defining the General Goal

The general goals for the project, as stated in the beginning of this section of the discussion, were to:

1. develop individuals' talents so that they may achieve satisfaction in a life work or vocation,
2. develop responsible citizenship, and
3. make it possible for the individual to participate in and to share with others a variety of aesthetic experiences.

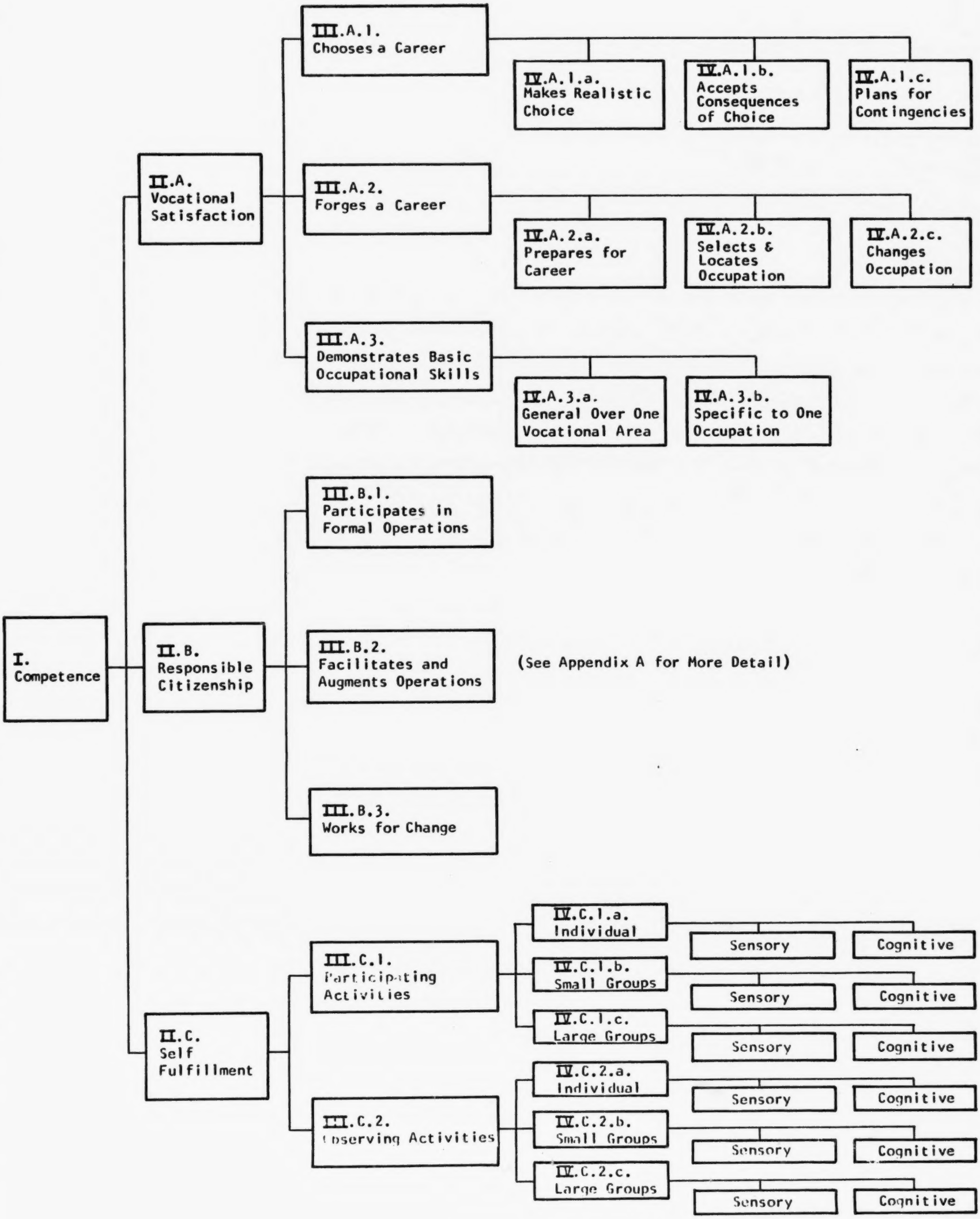
Together, these goals describe a general competence for dealing with life in modern society. A performance statement of the goals, at the same level of generality, is organized as follows:

> I The graduate can demonstrate the skills and knowledges which are judged essential to vocational satisfaction, responsible citizenship, and self-fulfillment, and which are specified below.

This statement clarifies the original general goals by establishing student performance as the matter of concern. It also explicitly substitutes proximate (to graduation) goals for remote goals. Although our "real" interest may be the student's performance in later life, we cannot wait that long to evaluate our product. We must have objectives which can serve as a basis for evaluation of present student learning and present curriculum. To be sure, a kind of leap is required to substitute proximate for remote goals. Long-term, systematic evaluation may reveal that satisfaction of the proximate goals does not unerringly result in satisfaction of the longer-range goals. If so, then the proximate goals can be adjusted. But the uncertainties of the leap do not relieve us of the responsibility for being clear and specific about what we are aiming for now.

Statement I indicates a logical structure to be filled out as the goal definition is developed. Figure 1 displays the part of the structure which will be discussed in this report.

Thus, the most general goal, "competence," is specified further in statement I, and shown in Figure 1, to include the skills and knowledges required for vocational satisfaction, responsible citizenship, and self-fulfillment. Each of these second-level goals implies several third-level



(See Appendix A for More Detail)

FIGURE 1

PARTIAL STRUCTURE RELATING SPECIFIC OBJECTIVES TO GENERAL GOALS

goals, and so on. We turn now to consideration of each of the three major components of "competence."

Vocational Objectives

Vocational satisfaction certainly requires that the world of work be entered with some marketable skill. However, the pattern of skills and knowledges which is in demand can change locally, even nationally, in a relatively short period of time. Over a working lifetime, the pattern will almost certainly change repeatedly and individuals can expect to shift their specific occupations several times (cf. U. S. Department of Labor, 1965; Venn, 1964). Education for vocational satisfaction must find a way to produce graduates who can accommodate such changes in the demands of the market place.

The shift from one occupation to another, or the adjustment to a change in the requirements of an occupation, will be less difficult as the number of new skills and knowledges is smaller. That is, the person with least new learning to accomplish will make the required change most easily. The versatility we seek requires that students have capabilities which are generalizable in the sense of being useful in many occupations. One class of such capabilities which can be identified consists of those which are important to vocational success and satisfaction, but are not required for actual performance of the tasks which make up a particular job. If we accept the premise, indicated earlier, that choosing a career is not a one-time process, but rather is an ongoing process in which an individual must repeatedly review his aspirations and skills in view of current opportunitites, then many of the capabilities required to make effective career choices are highly generalizable; so, also, are many capabilities in such areas as interpersonal relations and work attitudes.

Some capabilities are less generally required than those of the previous paragraph, but are not restricted to a single job. Thus, knowledge about the nature of metals and the processes for working each kind of metal is generally required in the metal-working occupations. Similarly, knowledge of special symbology and terminology (e.g., electrical schematic drawings) is generalizable

over many occupations. The curriculum must provide for learning of such generalizable capabilities.

It is useful to organize vocational skills and knowledges into three categories: those required to choose a career, those required to forge a career, and those required to perform satisfactorily in an occupation. This categorization is comprehensive of both general and specific occupational capabilities. It also recognizes the importance of capabilities related to vocational change. The performance statement of vocational goals at this level can be formulated as follows:

> II.A. The graduate can demonstrate the skills and knowledges required: to make an appropriate career choice, to forge a career, and to perform satisfactorily in an occupation.

By extending this analysis level-by-level, we become increasingly precise about the performance to be included in our meaning of vocational competence. For example, as shown in Figure 1, the "chooses-a-career" category subdivides into three. The progression from that point in the structure to specific objectives is illustrated by the following abbreviated list.

III.A.1.	Chooses a career
IV.A.1.a.	Makes a realistic choice
V.A.1.a.(1)	Evaluates the world of work
VI.A.1.a.(1) (a)	Identifies educational and achievement requirements for given vocational areas.

The next step is the statement of specific objectives meeting all of our criteria. Several categories exist at each level in the abbreviated list above so that a large number of specific objectives is generated. Each of them is related through the structure to the general goal with which the process began.

The progression following "demonstrates basic occupational skills" is of particular interest because it reflects major decisions as to the specific occupations for which preparation is to be offered. The progression is illustrated by the following abbreviated list:

III.A.3. Demonstrates basic occupational skills and knowledges.

IV.A.3.a. Those general to occupations in one of the following vocational areas (11 areas listed).

IV.A.3.b. Those specific to one occupation in the chosen vocational area (many occupations listed for each vocational area).

The next step in each case is a list of specific objectives which define the performance capabilities of the graduate in a particular vocational area and occupation. The eleven vocational areas chosen for training were specified in the original study proposal. The selection of occupations within each vocational area and the identification and description of specific task requirements for each occupation has been a major enterprise in project activities to date. The procedures used in this vocational analysis have been described in a previous report (American Institutes for Research, 1965).

Citizenship Objectives

Preparation of young people for responsible citizenship has been a matter of concern for some years. A number of important studies has been done to define citizenship objectives. Many educational programs have been established to develop good citizenship. A useful review of these studies and programs is provided by the American Association of School Administrators (1954). Most studies reported in the referenced volume arrived at lists of criteria for good citizenship by consensus of various groups of people. The criteria are stated in general terms. For example, consider the following list selected from four different studies:

"An adequate understanding of, and wholehearted allegiance to, the democratic way of life."

"Has a philosophy of life consistent with the values of democracy."

"An appreciation of the rights, protections, duties, and responsibilities which political democracy ensures and exacts."

"Believes in equality of opportunity for all people."

There is no criticism of these statements as general goals, but they cannot serve as objectives in our sense. Educational programs based on general statements such as these, without an explicit rationale relating the goals to what students are expected to be able to do, run the risk of not being able to evaluate the program's success in meeting the goals.

In Project ABLE, we are committed to a different approach. We wish to evaluate a curriculum for which the content is explicitly derived from the behavior desired after graduation. Thus, we begin our derivation of citizenship objectives by asking, "What is it that responsible citizens do?" This approach does not deny the relevance of "beliefs," "values," "appreciation," "respect" or other similar concepts. It does hold them to be characteristics which can be detected and evaluated only through their effects on behavior. If these inferred characteristics do have significance for the way in which citizens behave, then we should be able to define the kinds of behavior which identify a citizen having those characteristics. This may be a difficult task, but to claim the task impossible is to admit the inability to show that anything relevant has been learned at all (Mager, 1962). In Project ABLE, we are making the attempt to define citizenship goals in terms of specific performance objectives.

The analysis leading to specific citizenship objectives is of the same form as the analysis for vocational objectives. The logical structure for this portion of the definition is indicated at several levels in Figure 1. As before, the first requirement is that we provide a performance statement of the goal "responsible citizenship."

We begin by noting that societies are organized in order to identify problems and to solve them efficiently, and in order to accomplish goals which are not easily accomplished otherwise. Although the organization established varies from one societal group to another, the agents of society, in every case, are assigned certain obligations and prerogatives with respect to members of the society and to other societies. Each member is assigned certain obligations and prerogatives with respect to other members and to the society. It is the behavior of individuals as it relates to their obligations and prerogatives as members of society which is considered here

to be citizenship behavior. Our procedure requires that we now define major categories of behavior available to the citizen.

Citizenship behaviors can be organized into three categories defined by the relations between the citizen and the organized society. Thus, as shown in Figure 1, the citizen may participate directly in the formal operations of society. He may act in ways which facilitate and/or augment the operation. He may monitor the operations of society and work for changes (in goals, functions, people, emphasis, or whatever) he considers desirable. The performance statement of citizenship objectives at this level of generality may be formulated as follows:

> II.B. The graduate can demonstrate the skills and knowledges required of citizens: to participate in the formal operations of society, to facilitate and augment the formal operations of society, and to work lawfully for changes considered desirable.

This categorization, though by no means the only one available, is comprehensive. That is, any citizenship behavior can be properly located in exactly one of these categories.

The progression from this level has not yet proceeded to detail as specific as that reached for vocational objectives. However, Appendix A presents additional detail for which there was not adequate room in Figure 1.

A major decision sequence in developing vocational objectives was presented by the need to limit the variety of vocational areas and occupations for which training would be developed. An analogous problem exists in developing citizenship objectives. Practical limitations require that we limit the curriculum to something less than all of the specific objectives which could be generated by the structure begun in Figure 1 and Appendix A. Some understanding of the problem of selection can be gained by noting that the structure as displayed is appropriate for any one of the several partially overlapping societies of which one individual is a citizen. Thus, he is a member of a family, a neighborhood, a local community, a state, a country, and a world. Each of these societies has laws (or rules), practices, agents, functions, and goals. An

explicit enumeration of all possible specific citizenship objectives in even one of these societies would be impossible within the practical limitations of Project ABLE.

Our present plan for selection envisions a three-dimensional table. One dimension is a list of types of citizenship behaviors as begun in Appendix A. The second dimension is a list of societies to which the average citizen belongs. The third dimension is a list of important societal goals. Each cell of the three-dimensional table could, then, contain those kinds of behavior relevant to a particular goal in a particular societal organization. Thus, one cell might contain specific objectives related to petitioning the local government on a matter of public education. Another could contain specific objectives related to complying with Federal laws concerning public health. A third might contain objectives related to using systematic procedures in arriving at a solution to an international economic problem. Before actually enumerating these specific objectives, however, judgments would be rendered, with the counsel of the Advisory Panel, as to the relative priority of the various cells in the table (categories of objectives). Presumably, those categories which are considered likely to be encountered by the average citizen would be selected in preference to those considered to be unlikely experiences. This selection procedure could provide a manageable and coherent set of categories for which specific objectives then would be written.

Although the process of developing citizenship objectives has not yet been completed, it is clear that it will be possible to produce specific objectives which meet our criteria and which are related systematically to the general educational goal with which we began.

Self-Fulfillment Objectives

Vocational and citizenship objectives derive largely from demands imposed on the individual by outside forces. To a substantial degree, satisfaction of objectives in those areas represents a compromise between each individual's needs, abilities, and desires and the responsibilities and limitations thrust on him by the society of which he is a member. Fortunately, not all of one's

time and energy is required for vocational satisfaction and responsible citizenship. In fact, the proportion of time required for earning a living has steadily decreased on the average during recent years and it appears likely that this trend will continue. With significant and increasing amounts of leisure available to the average citizen, it has become practical to consider educational programs designed to aid people in finding and developing satisfying leisure activities.

Compared with vocational and citizenship activities, leisure activities are selected and engaged in with relatively more freedom. The individual can exercise practically free choice over a very wide range of activities. Further, there is no essential restraint which limits an individual to a single choice or requires him to stay with a choice he has made. This freedom of individual choice, combined with the practically unlimited variety of activities from which an individual may choose, greatly complicates the problem of describing the domain of leisure activity and of selecting objectives for the educational program.

Before proximate goals are stated for self-fulfillment, two principles should be made explicit. The first of these is a rule for deciding which of the many possible leisure activities qualify as self-fulfilling. It is held that not all lawful activities are equally desirable as ways to use leisure. Rather, leisure activities are preferred which contribute to the acquisition, retention, or improvement of some skill or knowledge. Such activities are preferred because they increase the individual's opportunitites for satisfying experiences. Thus, learning to paint in water colors, to play golf, to distinguish between compositions of several composers, or to fly an airplane are desirable activities because they increase the number and variety of ways in which satisfaction may be found. Also, they are desirable because of the satisfaction which accrues from achievement and from exercise of a skill or application of knowledge. Activities which also facilitate additional learning are particularly desirable because they contribute to rapid expansion in the sources of satisfaction available to an individual. This principle for identifying desirable leisure activities assists in defining what is meant by self-fulfillment. Thus, in our usage, self-fulfillment refers to a process

whereby the individual learns, rehearses, or improves skills and knowledges of his own choosing in a sequence and at a rate which provides him with maximum satisfaction.

The second principle which should be mentioned concerns the limits on aspirations for an educational program. It is that the program should introduce each student to a wide variety of desirable leisure activities and should provide an opportunity for each student to learn basic skills and knowledges required for at least two of these. This principle is based on the assumption that many students will have no other opportunity to explore a wide variety of such activities with informed assistance, and that such an opportunity is important to self-fulfillment. It should be noted that the second principle does not require that all possible activities be explored, only a variety. The intent is that the student sample many types of activity not just many activities of one type. It is important, then, that a classification system for activities be established and that specific activities be selected to represent each type.

One classification system now being considered has three dimensions: (1) participation-observation, (2) sensory-cognitive, and (3) individual-social. The first of these distinguishes between participant activities (e.g., playing tennis) and observing activities (e.g., watching a tennis match). The main distinction between the participating and the observing activities is the extent to which the central action is influenced by the person's activity. Thus, the participant creates the tennis game, but the observer is not essential to the game's progress. Similarly, painting a picture is distinguished from comparing pictures, and acting in a play is distinguished from attending a performance.

The second dimension distinguishes between activities which are dependent upon sensory-motor processes primarily and those dependent upon cognitive or intellectual processes primarily. It is recognized, of course, that most activities contain elements of both, but the distinction is useful to ensure complete and balanced coverage. There is little question that playing chess and solving mathematical puzzles, for example, illustrate the cognitive end of the dimension better than do, say, swimming and playing football.

The third dimension distinguishes between activities on the basis of the amount of interpersonal interaction involved. Thus, some activities (e.g., bird watching, writing a story) require only the individual. Some (e.g., playing bridge, barbershop singing) require a small number of others in addition to the individual. Some (e.g., watching a ball game, attending a concert) normally involve or require a large group of people. Of course, for some activities, the number of people may vary, but once again, the distinction between individual and social activities is useful.

The definition of self-fulfillment and the categorization of activities allow us to state self-fulfillment goals in performance terms appropriate to the graduate as follows:

> II.C. The graduate can demonstrate knowledge of at least one leisure activity in each of the twelve categories defined below and can demonstrate skills and knowledges required to engage in at least two activities which are categorized differently with respect to sensory-cognitive and with respect to individual-social components. Each category of leisure behavior is defined by a combination of three characteristics selected one from each of the following sets:
>
> Sensory or cognitive
> Individual or small group or large group
> Participation or observation

The next step is to select several activities within each category to constitute the curriculum offerings. Thus, for the individual-participating-sensory category, one might select a list like: swimming, golf, sculpture, instrumental music. The sel ction process must include consideration of available faculty skills and necessary facilities. Once the selection is made, specific objectives meeting all criteria may be prepared.

It should be noted that self-fulfillment activities are not necessarily unrelated to vocational and citizenship activities. Many activities which are means by which some people earn a living are desirable leisure activities

for others. Familiar examples are: woodworking, instrumental music, sewing, sports, painting and sketching. Some activities useful for good citizenship are found in some leisure activities. For example, consider: public speaking, reading about or investigating historical or current issues, participating in group discussions. Final selection of leisure activities for the curriculum may well be made so as to employ available faculty skills and facilities in more than one aspect of the program. Perhaps, more important, teachers and counselors may be able to assist students in finding opportunities to capitalize on their skills and abilities by using them in several areas.

DEFINING GUIDANCE PROGRAM OBJECTIVES

The general goals of the new curriculum are three: vocational satisfaction, responsible citizenship, and self-fulfillment. Theoretically, a student could attain some degree of competence in each of these areas on his own by utilizing those things made available to him in the school curriculum and outside the school environment. He could progress through a curriculum of his choice which matches his interests and achievement, make appropriate decisions, implement these decisions, make necessary changes, and accomplish this in a manner which does not disrupt those surrounding him. Achievement of educational goals is sufficiently important for every student, however, that it is considered essential to provide him with any assistance, guidance, and direction he may need for success. The task of the guidance program is to provide these services.

The general objective of the guidance program may be stated as follows:

> Assists each student as necessary to ensure that he progresses toward realistic goals of vocational satisfaction, responsible citizenship, and self-fulfillment, while encouraging maximum student participation in decision-making.

The next question is, what must a guidance program do in order to accomplish this goal? The specific objectives of the guidance program differ from the specific instructional objectives in that guidance objectives describe the activities of people other than the student, primarily. However, all activities of these other people are intended to assist the student as he attempts to select goals and achieve them. The student is an active participant in the process of choosing goals to the extent that he is capable.

It is important to note that we refer here to functions and actions of a program, not to the activities of some special group of people. It is necessary first to identify the activities which are needed to satisfy the general objective of the guidance program. Then a decision can be made,

with respect to each program activity, as to how best to provide that action, including who should provide it. Probably, some functions will be found to be handled best by guidance specialists. Many others may be handled best by teachers in daily contact with the student. For the present, however, this decision may be postponed. In this section we are concerned only with identifying the kinds of activity required to satisfy the general objective.

If the objective requires us to assist a student in selecting and achieving goals, then it is necessary to know his starting point. That is, it is essential at the time of assistance to describe the student with respect to relevant characteristics including achievement, ability, and interests. Examination of the student may indicate talents or deficiencies relevant to his educational progress. In this case, effective action may be selected with the student to develop the talent or remove the deficiency. Periodic assessment of each student permits realistic decision-making at important choice points in his educational and vocational career. These considerations are summarized in the following guidance objective:

A. Periodically evaluates each student with respect to characteristics important for selection and achievement of his goals.

The characteristics to be evaluated may be different for different students, and different for the same student at different stages in his educational process. Thus, a standardized arithmetic achievement test might apply to all children at a certain grade level, a particular shop test might be appropriate only for a student in one vocational area, and an individual intelligence test might be appropriate only for a student whose abilities are thought to have been overestimated or underestimated.

The educational, vocational, social and interpersonal needs of the student are expected to change as he is influenced by his in-school and outside-school environments. It becomes important to identify these needs, to assist the student in the formulation of objectives to meet them, and to help him keep his current objectives and longer-range goals consistent. To accomplish this,

the program must have the following objective:

B. identifies the immediate and future goals of each student.

Realistic educational and vocational decision-making by an individual student requires information about the training and occupational opportunities available to him. Each student must know the options available to him within the new curriculum, the kinds of skills and knowledges he may learn in each course of study, the ways in which he will be expected to learn and perform within any selected course, and the highest goals possible of attainment in each program. The student should be prepared for his role in the new program, especially since plans are being developed which assign the student more responsibility for his own learning than he has had previously. Students may find this step to be a difficult one, having studied under very different conditions in prior school years. It is expected that teachers will spend more of their time working with one student at a time and in assisting students in the selection of next learning steps.

In the area of occupations, it is important that he identify, for example, the attractive and prohibitive elements of a variety of occupations and the entry level requirements for each. Such information is needed at different levels of specificity depending upon the student's stage of educational progress. For example, a junior high school student may need only to distinguish families of occupations and their corresponding entrance requirements. In senior high school, information about qualifications for specific occupations becomes important. These considerations require two objectives:

C. identifies and informs the student about the educational and vocational opportunities available to him,

D. identifies and informs the student about the conditions and requirements of each available opportunity

It is not sufficient that a program gather and enumerate items of information about the student and the opportunities open to him. The critical next step

is a realistic reconciliation of achievement and goals for individual students and their parents. The student should be assisted in selecting and progressing through a sequence of instruction which is consistent with the best current information on his abilities and interests, and his parents should be informed throughout. Sometimes, perhaps often, longer-range goals as well as immediate objectives may need to be adjusted in view of the student's changing interests and increased knowledge. For example, a student who has elected a non-college curriculum should be assisted in revising his educational program and his longer-range goals if he exhibits the necessary talents and expresses the desire to continue study beyond high school. Decision adjustments must be made as changes occur in the individual's goals or in the opportunitites which are available to him. Three guidance objectives are derived from these additional considerations:

E. with each student, analyzes the consistency among his goals, his capabilities and interests, and his educational and vocational opportunities;

F. with each student, selects realistic courses of action;

G. adjusts decision(s) as conditions change in the individual or in his opportunities.

Finally, it is essential to evaluate the program by observing in what manner, and to what degree the program operation contributes to desirable student outcomes, and to change the program to the extent that it either violates or does not meet program objectives. The design of the program also should be one that is feasible at the operational level, and carried out within practical limitations of time, cost and personnel. This brings us to the final guidance objective:

H. evaluates program effectiveness in terms of student outcomes.

These major objectives for the guidance program are listed below.

General Objective:

Assists each student as necessary to ensure that he progresses toward realistic goals of vocational satisfaction, responsible citizenship, and self-fulfillment, while encouraging maximum student participation in decision-making.

A. Periodically evaluates each student with respect to characteristics important for selection and achievement of his goals.

B. Identifies the immediate and future goals of each student.

C. Identifies and informs the student about the educational and vocational opportunities available to him.

D. Identifies and informs the student about the conditions and requirements of each available opportunity.

E. With each student, analyzes the consistency among his goals, his capabilities and interests, and his educational and vocational opportunities.

F. With each student, selects realistic courses of action.

G. Adjusts decision(s) as conditions change in the individual or in his opportunities.

H. Evaluates program effectiveness in terms of student outcomes.

These represent the most general level of analysis for guidance program behaviors. Objectives now are being developed at successively more specific levels for junior and senior high school programs. Procedures designed to measure the extent to which objectives are met, also are being devised.

REFERENCES

American Association of School Administrators. Educating for American citizenship. Thirty-second yearbook. Washington: National Education Association, 1954.

American Institutes for Research. Project ABLE: First quarterly technical report. Pittsburgh: Institute for Performance Technology, June, 1965.

American Institutes for Research & Quincy Public Schools. Development and evaluation of an experimental curriculum for the new Quincy (Mass.) vocational-technical school. Pittsburgh: Institute for Performance Technology, 1964. (P-1648)

Bloom, B. S. (Ed.) Englehart, M. D., Furst, E. J., Hill, W. H., & Krathwohl D. R. A taxonomy of educational objectives: Handbook I, Cognitive domain. New York: Longmans, Green & Co., 1956.

Commission on the Reorganization of Secondary Education. The cardinal principles of secondary education. Washington: Government Printing Office, 1918.

Dressel, P. L. (Ed.) Evaluation in general education. Dubuque, Iowa: Wm. C. Brown Co., 1954.

Education Policies Commission. The purposes of education in American democracy. Washington: American Council on Education, 1938.

Folley, J. D., Jr., Fairman, Jean B., & Jones, Edith M. A survey of the literature on prediction of Air Force personnel requirements. Wright-Patterson Air Force Base, Ohio: Wright Air Development Center, 1960. (WADD Technical Report 60-493)

Gagné, R. M. The acquisition of knowledge. Psychol. Rev., 1962, 69, 355-365.

Gagné, R. M. The implications of instructional objectives for learning. In C. M. Lindvall (Ed.), Defining educational objectives. Pittsburgh: University of Pittsburgh Press, 1964. Pp. 37-46.

Gagné, R. M. Conditions of learning. New York: Holt, Rinehart & Winston, 1965. (a)

Gagné, R. M. Educational objectives and human performance. In J. D. Krumboltz (Ed.), Learning and the educational process. Chicago: Rand McNally, 1965. Pp. 1-24. (b)

Gardner, J. W. National goals in education. In Goals for Americans. The Report of the President's Commission on National Goals. New York: Prentice-Hall, 1960. Pp. 81-100.

Krathwohl, D. R., Bloom, B. S., & Masia, B. B. A taxonomy of educational objectives: Handbook II, Affective domain. New York: David MacKay, 1964.

Lindvall, C. M. (Ed.) Defining educational objectives. Pittsburgh: University of Pittsburgh Press, 1964.

Mager, R. F. Preparing instructional objectives. Palo Alto, Calif.: Fearon, 1962.

Miller, R. B. Task description and analysis. In R. M. Gagné (Ed.), Psychological principles in system development. New York: Holt, Rinehart & Winston, 1962. Pp. 187-228.

National Education Association, Project on Instruction. Schools for the sixties. New York: McGraw-Hill, 1964.

Rockefeller Brothers Fund. The pursuit of excellence: Education and the future of America. Panel Report V of the Special Studies Project. New York: Doubleday, 1958.

Smith, R. G., Jr., The development of training objectives. Alexandria, Va.: The Georgia Washington University, Human Resources Research Office, 1964. (HumRRO Research Bulletin 11)

Tyler, R. W. Constructing achievement tests. Columbus: The Ohio State University, 1934.

Tyler, R. W. Achievement testing and curriculum construction. In E. G. Williamson (Ed.), Trends in student personnel work. Minneapolis: University of Minnesota Press, 1949. Pp. 391-407.

Tyler, R. W. Some persistent questions on the defining of objectives. In C. M. Lindvall (Ed.), Defining educational objectives. Pittsburgh: University of Pittsburgh Press, 1964. Pp. 77-83.

United States Department of Labor. A report on manpower requirements, resources, utilization, and training. Washington: U. S. Government Printing Office, 1965.

Venn, G. Man, education and work. Washington: American Council on Education, 1964.

PLANS FOR NEXT QUARTER

The following activities are planned for the quarter ending 31 December 1965:

1. The first selection and statement of objectives will be reviewed by the Advisory Panel.
2. Objectives will be revised, augmented, and organized into courses.
3. The derivation of objectives will begin.
4. Miscellaneous gaps in the vocational analysis will be filled.
5. Analysis of instructional requirements in mathematics and in social studies will continue.
6. Development of detailed plans for the junior high guidance program will begin.

APPENDIX A

EXAMPLE LOGICAL STRUCTURE FOR CITIZENSHIP OBJECTIVES

I. Participates in formal operations of society

- A. Pays taxes
- B. Contributes services required
  1. Juror
  2. Witness
  3. Military
  4. Report
  5. Assistance to societal agents
- C. Complies with laws restricting action
- D. Complies with customs
- E. Votes
- F. Petitions
- G. Runs for (holds) elective office
- H. Accepts appointive office

II. Facilitates and augments societal operations

- A. Provides economic support for family
- B. Provides essentials for development of family (physical, social, etc.)
- C. Makes decisions on societal issues on the basis of accumulated evidence and systematic reasoning
- D. Makes known his desires and opinions on appropriate issues to responsible agents
- E. Chooses actions to restore social controls in instances of disruption

III. Works to achieve orderly social changes

A. Identifies needs, problems, defects

B. Uses systematic and rational procedures to identify solutions

C. Persuades others toward recognition of issues involving social change

D. Defends own convictions by rational argument

E. Joins with others in meetings, promotions, or representations to seek solutions and implement them

F. Contributes time and/or money to organizations having goals considered socially desirable

G. Formulates and executes plans to meet social needs